The
Public Health Journal
TORONTO, CANADA.
VOL. VII. SEPTEMBER, 1916 NO. 9

RETROSPECTIVE AND PROSPECTIVE

By DR. W. H. HATTIE, Provincial Health Officer, Halifax.

A GLANCE over our statistical records for the last provincial year, and a comparison of last year's experiences with those of previous years, enable us to draw some conclusions as to the progress we are making. The Deputy Registrar-General computes the general death rate for 1915 as 15.3. For the previous year it was 15.1, and for the quinquennial period 1909-1915 it averaged 14.9. This is rather disquieting to a recently appointed Provincial Health Officer who has ambitions, and it can certainly not be regarded as satisfying. However, it is possible to extract some sunbeams from the cucumber.

The tuberculosis death rate, which has been so distressingly high in Nova Scotia, was lower in 1915 than in any other year for which we have statistics. The deaths from pulmonary tuberculosis numbered 124 less than in 1914; while the death rate from this disease, which averaged 1.79 during the quinquennium 1909-1913, and which was 1.56 in 1914, dropped last year to 1.30 per 1,000. In 1911 the rate was 1.97, so that last year's rate is 34 per cent. less than the rate of five years ago. It is quite wrong to deduce conclusions from such a comparison, but when one is searching for sunbeams the finding is not to be despised.

Another bright ray is to be found in the statistics for infectious diseases. The deaths recorded as resulting from these diseases numbered 92 less last year than in the previous year. And there were 25 fewer deaths attributed to infantile diarrhoea in 1915 than in 1914.

Thus in the case of the communicable diseases — those to which the M. H. O. especially directs his attention—the statistics for the year show improvement. Even though it is unwise to bank too much upon the experience of a single year, one may be at least permitted to feel encouraged by such results, and to derive a stimulus to greater effort for the future.

A practical point, and a sharp one, so strongly thrust into us by last year's statistics that we should be kept awake for a long time, is that reduction of the general death rate is not to be attained merely by efforts at the control of communicable diseases. Despite a notable lessening in the number of deaths from the communicable diseases, last year's total death rate was really in excess of that of the year before. It would prove a wearisome and possibly not a very fruitful task to go into an analysis of the causes which contributed to this regrettable state of affairs. It will suffice to say that the duties assigned to the health officer by our Public Health Act cover a very small portion of the field to which he might well direct his energies, and that an ideal organization of our public health service would provide the means by which no factor which bears in any way upon the maintenance of health should be neglected. There can be no doubt but that many of the conditions which loom large in our mortality returns are more or less amenable to control, and that the scope of the public health official might with great advantage be widely extended, if our people could but be made to appreciate the fact and to authorize the necessary expenditure.

*Association of Medical Health Officers of Nova Scotia, July 4th, 1916.

Careful attention to cleanliness and ventilation, to general measures of sanitation, to the quarantine of infectious diseases and subsequent disinfection of the premises in which they have been housed, are all measures the importance of which should not be minimized. But we should be careful not to make a fetich of such things. We have learned that those who live in squalid, dirty, overcrowded and ill-ventilated homes do not continually suffer from infectious diseases; that in point of fact very sturdy and healthy people often live under most unhygienic conditions. It is therefore not dirt, or lack of ventilation, or sewer gas, or squalor alone which determine the incidence of disease. Whether such factors have the influence in reducing resisting power and in disposing to infection, which we have been in the habit of attributing to them is, just now a moot problem. The only assertion which we can make with assurance is that the determining factor in infection is an infecting micro-organism. In the absence of the specific cause, an infectious disease will not develop. And as our knowledge of specific causes becomes more perfect, our conception of the way by which infection is commonly communicated is being modified. Thus we find that many notable authorities no longer regard fomities as a common vehicle of convection, and have ceased to incriminate third persons as frequent spreaders of infection. The opinion is rapidly gaining ground that the communicable diseases are in practically every instance disseminated direct from infected persons to susceptible persons who come into more or less intimate contact with them. Such knowledge not only simplifies our public health methods, but it makes them more exact, and has in many places led to a notable modification of the rules relating to quarantine and disinfection.

Attention is being directed more and more to the foci from which infection spreads rather than to the route by which it may be disseminated. The present teaching is that the control of communicable diseases can best and most reasonably be effected by taking charge of and destroying the infective organisms at the moment they leave the patient. They should not be given an opportunity to reach other individuals in such a state of virulence that they may cause disease in such individuals.

The problem remains a large one, but it is less imposing than might at first thought appear. It is becoming daily more evident that infective micro-organisms can find a suitable nidus for growth and multiplication only in the human body, and that, with few exceptions, they rapidly lose virulence when they leave the body. The passage of infection from one person to another is, therefore, seldom possible unless the transfer be made with reasonable directness. Germs escape from the patient's body especially in the discharges from mouth, nostrils, bladder and bowels, and in the mouth spray which is ejected in the acts of sneezing, coughing, loud speaking, etc. Germs gain access to the bodies of others mainly through the mouth. Prophylaxis, consequently, is to be accomplished by rendering it impossible for such transference to take place.

Our faith must therefore be pinned more particularly to the person charged with the responsibility for caring for the infective patient. If we could be sure of competent and careful nursing, we need have little fear of the spread of infection from known cases. The problem which we have to solve is to secure the provision of such nursing and to devise a means of ferreting out the sources of infection (missed cases and carriers) which escape detection by our present methods. If we could but succeed in this, we would be at once in a position which would justify us in very materially modifying our methods of quarantine and disinfection, thus greatly lessening the expense and inconvenience attendant upon the care of infective patients, and which should enable us theoretically, to quickly eliminate all infectious disease.

It is especially important that all infective matter be efficiently disposed of immediately upon its issuance from the body. Few pathogenic organisms retain virulence for any protracted period outside of the body, so our efforts should be concentrated upon them during the time in which they are capable of causing mischief. Discharges from mouth, nose, bowel and bladder should be disinfected at once, and the vessels into which such discharges

have been received should be promptly rendered non-infective. Any body- or bed-clothing, and any article of any kind which may have become contaminated by an infective discharge should have immediate attention. Of outstanding moment is the need for prompt cleansing of the hands of the nurse or attendant who renders such a service. Let it never be forgotten that infection is nearly always received through the mouth, and that the attendant who neglects to wash hands after touching anything upon which infectious matter has recently been deposited, may contaminate a dish or other article which may subsequently come into direct contact with the mouth of another individual. One has but to think for a moment of the numberless uses to which one's hands are put, and of the numberless occasions on which they pass unwashed to the lips, in order to appreciate how important a part they may play in the distribution of infection.

Discharges from mouth and nostrils should be received, on issuance, upon pieces of gauze or old linen, and either burned at once or enclosed in paper bags or other suitable receptacles until an opportunity for burning arrives. The mouth and nose of the patient should be covered by gauze or old linen during the acts of sneezing, coughing or speaking, in order to prevent the ejection of mouth spray which may contain the infective element. And the hand which has held such gauze or linen should be cleansed at once. It is only by most minute attention to such all-important detail that the distribution of infective organisms can be prevented. This is a matter which cannot be emphasized too strongly.

Such measures are entirely practicable when we know that we have an infective case to deal with. But what are we to do about the cases which we have no knowledge of? Epidemiological studies have demonstrated the possibility of discovering such cases with much less difficulty than one might suppose. The epidemiologist must first endeavor to mark out zones of infection. This at once limits very materially the field to be investigated, and by a study of the zones it is usually possible to quickly determine what cases have been missed, and ordinary methods can then be adopted to ascertain whether or no there are any disseminators amongst these missed cases. The successful epidemiologist must, of course, have very special training added to natural acuteness and energy, and his value in public health work can hardly be over-rated. A special feature of his province is the detection of carriers of such infections as enteric fever and diphtheria—a difficult but not necessarily an impossible task, and one very essential to the successful prosecution of public health work. It is obvious, therefore, that a trained epidemiologist should be included in the personnel of a well organized public health service.

Without such an official, it cannot be expected that we will ever acquire full knowledge of every focus from which infection may spread. Even when physicians realize the obligation which rests upon them to report every case of infectious disease, we will still have to contend with the mild and probably unrecognized cases which receive no medical ministrations other than those of the grandmother or maiden aunt, to whom the public health act is a totally unknown quantity, and for whom the penalty clause has therefore no greater terror than it has for the average medical practitioner. When success in the conquest of infection depends upon accurate knowledge of every focus of infection, it can be seen how hopelessly inadequate are the measures now commonly in vogue. Fortunately it may, with a certain degree of reason, be assumed that the milder cases of infectious disease—those which are most likely to escape the observation of the physician—are not so likely to be the sources of spread of a severe type of disease as those cases to which the doctor is summoned. But it would be manifestly unwise to place too much dependence on such an assumption. Even if it were an infallible rule, while it might ease our minds in the matter of fatality, the neglect of such cases would not lessen the prevalence of communicable disease with its attendant suffering, expense and interference with business and industry. If we are not to continue our losing gamble with infection and death, we must take this thing seriously and make

adequate provision for the prompt discovery of every case of an infectious nature and of every carrier of infection, as well as for efficient nursing and supervision.

In some respects we are especially favored in Nova Scotia. Such problems as water supply and sewage disposal, which are so difficult of solution in many communities, cause us but little concern. Practically every town in the province is able to secure its supply of water from a source which insures purity, while the sewage, in practically every instance, is discharged into tide waters and thus satisfactorily disposed of. We are therefore in the very fortunate position of being able to concentrate our efforts upon other phases of public health work, and our responsibility for the proper performance of our duty along the lines which do demand our attention is relatively greater than if we had also to contend with the difficulties and expenditures which so commonly associate with the supply of water and the disposal of sewage.

We must, of course, neglect no part of the work which falls within the scope of the health officer, but it would appear only reasonable that we should direct our energies more especially to those conditions which exact of us the greatest toll in life and suffering and economic loss. A comparison of our statistics with those of other communities shows that we are in an unenviable position in respect to infant mortality and tuberculosis. Why should our infant mortality be double that of New Zealand? Why should our tuberculosis death rate be double that of Ontario and five times that of Saskatchewan? Why should we raise such a hue and cry over smallpox, which no one need have unless he so elects, and remain silent under the scourge of tuberculosis, which menaces every man, woman and child in Nova Scotia to-day? Do we not still pay tithes of mint and cummin, and neglect the weightier matters of the law?

We must endeavor to acquire a proper sense of proportion, and energize upon the most important things first. By all means the most important condition with which we have to contend is tuberculosis.

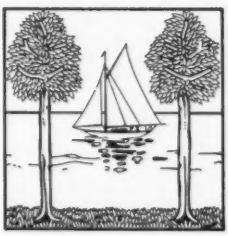
Other communities have effected tremendous reductions in the death rate from tuberculosis. We must do likewise. Our provincial legislators have made possible the establishment of a chain of institutions for the care of those tubercular patients who are mainly responsible for the distribution of tubercular infection. It is left to municipal legislators to decide whether or no such institutions will be provided. Very liberal assistance from the provincial treasury is assured by statutory enactment, but the initiative lies with the municipal authorities. It is our duty to use our every influence in the endeavor to induce the municipal and town councils to take speedy action upon this most important matter. And of course we must not remit in our efforts to educate the people in the methods to be adopted to prevent the spread of this disease.

Child welfare also demands our most careful consideration. Re-population becomes a necessary corollary to the war. Never before has the life of a little child meant so much to the nation. Our future work must give the means of effecting a substantial reduction of the infant death rate a foremost place. Health and opportunity must be assured our little ones if our province is to maintain a position of influence in the affairs of the Empire and of the world. At a recent conference of the Royal Sanitary Institute, called to discuss sanitary administration under war conditions, it was urged that no matter what retrenchment might be permissible in other lines, their should be no curtailment of effort in the promotion of child welfare and tuberculosis control.

We attach much value to educational literature in health matters. It is an encouraging sign of our times that such literature is largely sought after. The prominence given by newspapers and periodicals to "health talks" and articles which bear more or less directly on the maintenance of health, is an indication that there is a general demand for this type of literature. But unfortunately this reading matter is only appreciated by those who have reached adult life, who may have already been crippled and incapacitated through ignorance of the matters concerning which they are now greedy for knowledge. One cannot but feel that a vast good could be accomplished by suitable instruction of our school children in

the simple laws of health. I would have such instruction imparted in the lower grades, as it is only in these grades that all children can be reached. A speaker at the last Conference of Charities and Correction made this striking observation: "One cannot overlook the fact that the drunkard, the tramp, and the criminal were for many years under the instruction of our teachers in the public schools." We would enlarge this group by the inclusion of the physically unfit, and we may well ask ourselves if we have done wisely in neglecting to enlist in sympathy and co-operation of the school teachers in the great work of preventing disease.

The apathy of people generally is the most discouraging of all the difficulties with which we have to contend. When public interest is aroused, it is too often concerned in matters which have an aesthetic rather than an actual sanitary bearing, and the M. H. O. is often called upon to deal with what is really merely a nuisance and may not constitute any menace to health. It is only by education that such apathy can be overcome or such mistaken zeal properly directed, and in such education we have all a part to take. Our people should be made to realize the value of health, not merely because of the added pleasure which it gives to life, but because of the loss in efficiency and in earning power which sickness entails. The war has taught us a great lesson in respect to the cost of sickness, and it affords us an opportunity of doing really patriotic work by putting forth our best efforts to conserve the lives and health of our people, so that they may be able to render the most effective service to the Empire in this most critical of all times.



A FEDERAL BUREAU OF PUBLIC HEALTH

By DR. J. B. BLACK, ex-M.P., Windsor, N.S.

(Association of Medical Health Officers of Nova Scotia, July 4th, 1916.)

THE first and most important consideration of any nation is the health of its people. No nation can prosper, no nation can compete with or surpass its neighbors whose people are not vigorous, virile and healthy.

In a young nation like Canada with great areas, great resources to develop, the question of population of a virile people is of paramount importance; and wise statesmen have resorted to the policy of bringing in (and at great cost), people from other nations. Wiser statesmen would in addition to this, have adopted a policy of saving to the state our own people, who are dying of preventable diseases.

In the British North America Act, which welded together the British provinces on this continent, there was not forgotten Public Health; but knowledge of requirements were at that date, very limited and one small paragraph covers it all. The first section relating to public health defines the power of the Federal Government. The Federal Government has charge of "Quarantine and the Establishment and Maintenance of Marine Hospitals." The Act assigns to the Provinces "the establishment, maintenance and management of hospitals, asylums, charities and eleemosynary institutions in and for the Province, other than marine hospitals." Even with this superficial reference to the requirements necessary to care for Public Health, the Federal Government recognized its duty and its sphere, and did assume the responsibility of conducting this Department, and its duties were assigned to the then Minister of Agriculture. Until 1872 the administration of public health was conducted by a Federal Bureau, and under it a Federal Medical Board of which the late Doctor Tache (Deputy Minister of Agriculture) was secretary. The reasons for its lapsing were financial entirely. Here let me quote from a Federal official of public health: "For some years all public health work in Canada was administered by the Federal Government under the powers given it by the British North America Act." The Federal Government, with an uneasy conscience in evading their duty in the past, have been trying to make amends by taking a part of the health department to the Conservation Commission, with a medical adviser.

The Canadian Medical Association has been keenly alive to the need and great importance of a Federal Bureau of Public Health, and has on many occasions drawn the attention of the Government to this subject. In 1902, at the annual meeting at Montreal, Dr. E. P. Lachapelle, of that city, seconded by Dr. J. R. Jones, of Winnipeg, moved the following resolution: That, in the opinion of the Canadian Medical Association now in session, the time is opportune for the Dominion Government to earnestly consider the creation of a separate Department for Public Health under one of the existing ministers, so that regulations, suggestions and correspondence on such health matters as fall within the jurisdiction of the Federal Government, may be issued with the authority of a Department of Public Health." In 1903, a similar resolution was passed and a deputation from the association waited on the Prime Minister, urging the formation of a Bureau of Public Health. At that time, the Prime Minister authorized Dr. Roddick, M.P. (now Sir Thomas Roddick) to place a resolution on the Parliamentary Order Paper, with the view of having the subject thoroughly discussed, before the Privy Council took the matter up in earnest. In 1904, another deputation waited on the Government in this matter; and again in 1907 another deputation, appointed by the Canadian Medical Association, waited on the Premier. All these were cordially received and I am strongly of the opinion that if we had had, at that time, a Minister of Agriculture as sympathetic on this matter as was the Premier and some other members of the Cabinet, we would have had now a Federal Bureau of Public Health and a national laboratory for re-

search and the production of antitoxins and serums.

Is not a man worth more than an ox? The several Federal Governments since 1874 evidently think not.

For the protection of the health of domestic animals, the Federal Government has for years, had a national laboratory under the control of a Veterinary Director-General. From this laboratory there is sent out every year biological preparations, sometimes free, sometimes at merely nominal prices, for the prevention of disease amongst and treatment of domestic animals. More than a hundred veterinary surgeons are employed in this department, and more than half a million dollars are spent annually, for the prevention of disease in and treatment of animals. If it is the duty of the Federal Government to protect the health of hogs and cattle, how infinitely more is it their duty to protect the lives of our people?

Here is a little story told by Dr. Hurty, which is so short and so much to the point that I venture to repeat it: "A little mother under 25 years of age, was told by her physician, that she had the beginnings of consumption. She was told that it was curable. She wrote to the Federal Government — —the Government so solicitous for hogs and oxen—saying: 'I am told I have consumption in its earlier stages and can be cured by outdoor life, continued rest and proper food. I do not want to die, I want to live. I think I am of value to the nation. I want to raise my children, to make them good citizens. Where can I get well?' The reply was to this effect: 'This great Christian country has not yet risen to the mighty economy of saving the lives of its people or its little mothers from consumption or any other disease. So far as we are concerned, the only place you can go to, is the grave'. That is the first part of the story, this is the second part: A big fat hog one morning found that he had a pain in his stomach. He squealed loudly and the farmer came out to see what was the matter. The hired man said: 'He's got the hog cholera.' The farmer telegraphed to the Veterinary Department of the Government and the reply came quick: 'Why, certainly, I'll send you a man right away.' And sure enough he came—a D.V.S., a Doctor of Veterinary Surgery. He had a Federal Government syringe and a bottle of Government medicine, produced by the Government laboratory. He went for the hog and the hog got well. Now here is the moral: 'In Canada be a hog and be worth saving.' "

Apart from quarantine stations, marine hospitals and one lazaretto for care of leprosy, the Federal Government does practically nothing to prevent disease or preserve the lives of our people.

It is needless to say before this body of intelligent and educated medical men that disease and death (except from accident and senectus) can be prevented. It is also needless to say, that a Federal Bureau of Public Health properly equipped and scientifically organized, could to this end do more than any other institution. The Federal Bureau could do what the Provincial Boards cannot do for want of means, for want of money, equip a national laboratory which is so much needed, and provide for diffusion among the people by press and platform of knowledge of the laws of health, advice, caution, guidance. Here come the words of Holy Writ: "My people die for lack of knowledge." The appalling loss of life, the appalling loss to the nation of citizens and money, wealth, is worth considering. The basic cause of preventible diseases is want of knowledge, ignorance, ignorance which a Federal Bureau could largely dispel, saving thousands of lives and thousands of dollars beyond the cost of its labors.

The fiat has gone forth that all men must die, and it is for our greatest good, but it is unnecessary that our people should die in infancy, in youth or in middle age from preventable diseases. We are losing over 82,000 of our people every year. The estimate of scientific man is that one-third of that number die of preventable diseases, die while yet wage earners, die while yet adding to the wealth of Canada. At this estimate we are losing over 27,000 every year whom we should not lose. Looking at this from a monetary standpoint only, and placing the value of a man's life to the state at $1,000 (as it has been estimated over and over again), we are losing yearly to Canada, over $27,000,000 in the money value of lives sacrificed for the want of knowledge, from dis-

eases preventable, diseases which have no reason to be on the earth.

The heaviest tax paid in Canada to-day is for funerals, for burials, for the unnecessary sacrifice of human lives. Of all the unnecessary and inhuman conditions in Canada to-day, the worst is the slaughter of little children. We are losing every year over 32,000 children under 5 years of age, and most of them are done to death by ignorance in feeding. And the Federal Government has never lifted a finger to prevent this, but has spent many thousands of dollars to bring in foreigners to fill up this awful gap. Letting our own die without an effort to save and bringing in the foreigner, may be good statesmanship, but I doubt it.

A plea was made by the Minister of Agriculture in the late Government, that a Federal Bureau of Public Health would interfere with the rights and privileges of the Provincial Governments. This plea is untenable. It is ultra vires of the British North America Act, and it is directly at variance with the action of the Federal Government after Confederation, when "For years all public health work in Canada was administered by the Federal Government under the powers given them by the British North America Act."

There are many things relating to public health which can be done and done only by federal authority, and others which could be done more thoroughly than by provincial authority. Among the former are the very important questions of pollution of international rivers and streams—the St. Lawrence, the St. John, the St. Croix, the St. Francis, the St. Clair and several others — not Saints — which mark parts of the boundary between this nation and our sister nation of the United States. These offer grave dangers to the lives of our people, whose drinking water is taken from these rivers—dangers that can only be dealt with by Federal authority. In the same position is international transportation, by which disease is carried from one country to another. The question of pure food is already administered by the Federal Government, though why it adopts this responsibility and ignores others of national scope, I know not.

Another matter of pressing necessity and of paramount importance, is a Dominion laboratory, which can only be properly equipped and managed by the Federal Government.

(Here was read Conservation Commissioner's report to Premier.)

A Federal Bureau for Public Health would in no way interfere with or compromise the good work of the Provincial Boards. On the contrary, it would assist, encourage and stimulate the local boards to greater and more enlightened efforts. The medical men, the clergymen, the laymen, the every-day people of this Dominion must never cease the agitation for a Federal Bureau for Public Health.

The Government is expending vast sums in different federal departments to protect the health and save the lives of hogs, cattle and sheep; to protect our forests against waste; to protect our orchards from insect pests; to conserve our resources — all of which relate to the development and prosperity of our nation, while the health and lives of men, women and little children — these the greatest source of wealth, progress and prosperity —are denied that assistance, that guidance and enlightenment so necessary for their welfare, their happiness and useful citizenship. But the late Minister of Agriculture says: "Public health measures belong only within the jurisdiction of the provinces." With as much sense and reason might the province say it belongs to the county and the county say, it belongs to the municipality and the individual, and the devil take the hindmost. It is the work of **all** these, and no one of them should shirk it, especially the Dominion. The men of Canada who are ready and willing to fight in defence of liberty, or give up their lives for Canada and the Empire, have the right to the Government's protection of their wives and children from disease and death, which that Government can and should prevent.

In the name of economy for the wasted millions of money, in the name of humanity for the needless loss of lives, for the suffering, sick and dying; in the name of the needy poor, who have lost their bread-winner, let us never cease our agitation until a Federal Bureau thoroughly equipped with laboratories, bacteriologists, sanitary engineers, and a far-reaching press department is established at Ottawa.

SOME REFERENCES TO THE PRACTICE OF MEDICINE, THEN AND NOW

By DR. GEORGE E. DE WITT, M.H.O., Wolfville, N.S.

(Association of Medical Health Officers of Nova Scotia, July 4th, 1916.)

THOSE of us who have been engaged in the active practice of medicine for nearly or quite half a century sometimes realize with startling significance the change wrought in the practice of medicine and surgery then and now. Fifty years ago the aim of the practitioner of medicine was largely individualistic. The doctor concentrated his energies on the individual, he sought to arrest the course of the disease and check its ravages in the patient rather than seek the cause and prevent its recurrence and spread in the community. The treatment of the patient by the old routine without seeking the cause or seeking the manner in which these causes operate to produce their effects, is as unscientific as to undertake to cleanse an obstructed sewer without removing the obstruction.

The practice of medicine within the past thirty-five years has not tarried here. Linked with a knowledge, or the recognition, of a certain group of symptoms, giving it a name, and having a knowledge of a dry or local application or other resource that will put an end to these symptoms this is a more rational, complete and scientific view. It reaches out after the communal seeks after and discovers the cause, adopts measures to remove the cause and prevents the recurrence or outbreak of the disease; in the case of infectious disease preventing its spread in the community. This is preventive medicine, which slumbered and slept up to about thirty-three years ago. Since then, this brooder and more scientific view has slowly but surely been shedding across the horizon its shafts of light and truth, giving a clearer vision and confidence to the followers of the noble art of healing, and a greater guarantee of safety to the community.

Those of us whose work in the profession goes back from forty to fifty years, as we have endeavored to keep in touch with the conquests of medicine and surgery during that time and compare them with the present, marvel at the strides that have been made.

We remember the doctor in the old days visiting his typhoid patient day after day, administering calomel and opium, opium and calomel, strewing chloride of lime around the room (depending upon the strength of its odor to allay anxiety caused by the danger of infection), but ignoring the cause. Though the sink drain ran into the well and the barn with a filthy dairy herd was in close proximity to the house, the milk in pans in the house unscreened from flies; though the excretions from the patient were thrown into the privy vault (not burned or buried), though the windows and doors of the house were unscreened and the flies had access to all sorts of food, yet the doctor heeded not these things. His efforts were directed toward the morbid conditions of his patient, individualizing his energies, because he did not know how and why the infection was carried from door to door.

How changed are the conditions to-day! Not only does the physician individualize his efforts and skill in treating his typhoid patient, but the next thought is to protect the rest of the household and the community, by rendering all excreta harmless, burying or burning the same, and excluding flies. Not only has the discovery of the typhoid bacillus given an impetus to the enforcement of sanitary measures, made imperative the necessity of a pure milk and water supply, and done much to lessen the virulence and spread of typhoid and reduce its death rate, but added to these valuable measures for the suppression of the disease we have at hand anti-typhoid innoculations, which have become imperative in the army—the result of the practice proving a success. Frank W. Schofield, the Bacteriologist of the Provin-

cial Board of Health of Ontario, in a paper read by him before the Health Officers Association of that province and published in the Canadian Medical Journal, gives an interesting account of its prophylactic efficiency. He reports that during the last three years about 8,000 doses of antityphoid vaccine had been distributed by the Ontario Board of Health in the Province of Ontario, and the Board had not received any unfavorable reports. The Bacteriologist says, never give the vaccine to a patient who is fatigued. Allow no physical work after the injections. The more strictly one rests, the less discomfort caused by the reaction. Avoid alcohol either immediately before or after the injections. My experience with typhoid during the past year has been confined solely to an hotel, where all of the members of the family contracted the disease, save one, and also a housemaid and two permanent boarders. My conviction was and is that the disease was disseminated by a typhoid carrier living in the hotel. The cook had had the disease seven years before, and a permanent boarder two years previous. The blood of the cook was subjected to the Widel test with a negative result; that of the permanent boarder was not tested.

Within the last thirty-five years we have the discovery of the bacillus tuberculosis by Koch, in 1882, which brought home the fact to the profession that tuberculosis is infectious and in order to cure it, or stay its progress, a resistance must be built up in the system by fresh air, diet, graduated exercise, etc., thus hastening the process noted by Metchenkoff that the phagocytes or white blood corpuscles attack and destroy bacteria which have found their way into the blood stream. Tuberculin, discovered also by Koch, has made it possible by introducing it into the system to discover the presence of tuberculosis in suspected and early cases.

The practical application of diphtheria antitoxin, discovered in 1894 by Behring and Roux, has ridden the human race of much of the horror that existed in an epidemic prior to its discovery and application. Those of us who passed through the epidemics of diphtheria in the seventies and eighties of the last century, comparing the treatment and mortality of the disease then and now, can appreciate the blessing bestowed upon the world by these scientists. We are now assured that when diphtheria antitoxin is injected early into the blood of the diphtheria patient, it joins forces with other antitoxic substances in the body and thus counteracts and cures the disease. Also it is true, that antitoxin injected into those who are exposed to the infection will render them immune. So effective has this mode of treatment become, that the death rate from diphtheria has been reduced two-thirds.

In diphtheria as in other infective diseases, as cholera and typhoid, there lies the hidden danger of carriers who harbor the germs of the disease without showing any signs of sickness and are unsuspected until an outbreak occurs. Here again the bacteriologist comes to our aid and analyses the blood or the excretions of the suspected one.

That plague of the tropics, yellow fever, where proper sanitary laws have been enforced, has almost become a thing of the past. We are all aware of the ravages and great mortality of yellow fever thirty years ago. In Cuba, the West India Islands, South America, Central America, on the west coast of Africa, and in all countries where proper sanitary measures have been applied, where inherent conditions have not prevented, this scourge has been almost entirely abolished. All of us are familiar with the efforts of the French in the middle of the last century, when building the Panama Canal. Eleven-sixteenths of their workmen died of this disease; of twenty-four Sisters of Charity twenty died; of seventeen engineers sixteen died of yellow fever. Later, when the Americans undertook the construction of the canal, they called to their aid the resources of preventive medicine, which had been made use of in Cuba by General Gorgas in ridding Havana of the disease. Marshes were drained, herbage cut, pools and puddles were drained or covered by a film of parafin oil, and houses were screened, with the result that the mosquito, the direct agent of transmitting the cause of the disease was destroyed. A similar tale may be told of other countries infested with yellow fever.

Blood poisoning, gangrene and erysipelas prevailed in the hospitals years ago —now they are of the past. When I commenced the practice of medicine purpereal fever did its deadly work. The cause and means of prevention were not known or used. In a neighboring town a practitioner lost seven cases in as many weeks. It was before the days of practical antisepsis in rural communities. He did not know that he carried the disease from bedside to bedside.

At the age of sixteen years (fifty-seven years ago) I had a severe attack of scarlet fever. I remember how thirsty I was. My tongue was parched, my skin hot, burning and irritable. The old practitioner who attended me would not allow any but warm drinks. One night, while suffering intolerable thirst, heat and burning skin, with no sleep and no rest, I bribed the kitchen maid to take a two-quart pitcher into the cellar and fill it with cool cider. Oh! the relief! I just revelled in that cider until I got relief from thirst, and then I slept. When the doctor came in the morning, "Oh!" he said on greeting me, "you are better." "Yes," I said, "I feel better." From thence, irrespective of the doctor's orders, my medicine which I kept stowed away behind the bed, consisted of sips of cool cider. I recovered.

Since 1880 the progress of pharmaceutical chemistry has led to the discovery of many valuable drugs; not the least of these, 606, discovered by Ehrlich, which, if worthy of the virtue accorded it, will prove to be the greatest boon that has ever been found to lessen and subdue the greatest scourge that affects the human race. The drug is an instance of an entirely new therapeutic introduced by Professor Ehrlich, and based upon the principle that a specific chemical affinity exists between specific living cells and specific chemical substances. The series of such drugs that may be formed may prove to be almost unlimited, as we gather from the fact that salvarsan, viz., 606, represents its numerical order in the trial made to attain the desired result. If the credit given to this drug proves true, the young men who enter the field of medicine today, go armed with a weapon which will help them to do their share more effectively than their predecessors ever could in ridding the race of the physical and mental defects which visit the children of syphilities from generation to generation, thus hastening the day which the practice of eugenics is endeavoring to produce, viz., a race of the mentally and physically fit.

Not only does the young man in medicine go forth to-day equipped with drugs which are the product of the modern laboratory, but his armamentarium is strengthened by the new means and methods devised in facilitating diagnosis.

New methods of apparatus for taking the blood pressure, for examining the vocal apparatus and larynx by direct vision, apparatus for lighting up the cavity of the stomach, and not least the X-rays, discovered by Roentzen in 1893, have opened up a new field in the recognition of disease in concealed parts of the body. The character and extent of injuries, of dislocations, the presence of foreign bodies swallowed or otherwise, the disease of some of the internal organs, are all made plain to us.

Word comes to us from the great battlefields of the facility with which the character of wounds is determined and foreign bodies discovered by the aid of the X-ray. Major Wilson, of the Canadian General Hospital, speaks of the wonderful facility with which the work is done. He says the Canadian General Hospital has been provided with 15-h.p. petrol electric generators and the largest types of X-ray machines, enabling them to handle a large number of cases in the shortest space of time. Every general hospital has a number of X-ray apparatuses, and in addition there are two extra mobile units sent from place to place. A wounded man can be brought into the hospital, a photo taken, and the patient sent back into the hospital again in three minutes. The marvelous work of the X-ray, the trained nurse, the number of qualified medical men in each unit, the aseptic treatment of wounds, are life-savers which in the memory of some of us in past wars as the Crimean in the fifties, the Civil War of the United States in the early sixties, and even in the Boer War, were not possessed.

What a change from the **then** of thirty-five years ago to the **now** of 1916! What marvelous achievements have been wrought in medicine and surgery. All of which must give courage and confidence to the younger generation in the pursuit of the conversation of human life.

The diabolical gases of the Germans first made appearance at Ypres on the eighth day of May last as a cloud of green vapor, borne by the air toward that noble battalion of 1,126 picked men, the Princess Pat's Own, who from their crescent-shaped trench had by cannon and Enfield mowed the Germans down. Behind this strangling mass of vapor the Germans came with bayonets fixed. The gallant Canadians made ready to meet them, but this cloud of fumes, at that time to them a mysterious foe conceived in hell, materialized and and sent forth by devils incarnate, enveloped these gallant boys, the flower of Canadian manhood. It burned its way into their lungs until they could not breathe, and the 1,126 noble souls who had stood proudly in review at Salisbury Plain before the King and that efficient and noble soldier, the late Lord Kitchener, with a determination to do or die for their country and king, were soon a writhing, struggling mass, of whom scarcely sixteen men of the sixteen platoons were uninjured. But thanks to the laboratory and to a Canadian, Col. Naismith, who has found a palliative or preventive in the hyposulphate of soda used in a respirator, even this latest device of malignant Hun strategy is not much feared now.

Within the last thirty-five years there has not only been a wonderful decrease in the death rate from infectious diseases in our country, as smallpox, diphtheria and typhoid, but, simultaneously, all over the civilized world, such diseases as the bubonic plague, typhus fever, diphtheria, cholera and beri beri have been remarkably decreased in prevalence and potality as compared with former years.

Much has been done in Nova Scotia within the two past decades to improve and make more effective the Public Health Act, which doubtless has lessened and checked the march of infectious diseases. Yet we are of the opinion that a more perfect and practical system of surveillance is necessary in promoting sanitation in the rural districts than has yet obtained. I refer more particularly to the appointment of medical health officers for each county, singling out here and there a busy practitioner to do the duties of health offices at a remuneration of $100 per year. While this system obtains there will not be the progress which would result if qualified men whose hands were not tied by the routine of a large medical practice were secured for districts allotted to them at a remuneration commensurate with the duties devolving upon the office. Such a regulation would strengthen the hands and heart of the Provincial Health Officer and facilitate the progress of hygiene and sanitation in the province.

I must not weary your patience longer. Let me say to the young men entering the practice of medicine now, you have a goodly heritage. Your lives have fallen in pleasant places. Forget not that the men in the past toiled and strove to heal without many of the privileges you now enjoy and possess.

Remembering the words of the poet,—

"We are living, we are dwelling,
In a grand and awful time,
In an age on ages telling,
To be living is sublime."

And forget not another, who said and is still saying,—

"To cure is the voice of the past;
To prevent the divine wisdom of to-day."

DISINFECTION

By DR. JOHN K. McLEOD, City Medical Officer, Sydney, N.S.

(Association of Medical Health Officers of Nova Scotia, July 4th, 1916.)

THE following are two definitions from a standard dictionary, one of "fumigation" and the other of "disinfection."

"Fumigation" is the act of fumigating or disinfecting.

"Disinfection" is a process of disinfecting.

I suppose, however, we all agree that disinfection means purification from infectious matter.

There is probably no subject in preventive medicine that has received more attention or discussion than disinfection, and perhaps none on which the profession is more divided. Those who saw disinfection and fumigation as practised in the long ago, bring forward apparently indisputable evidence that they are right, while others who advocate at least a change from former methods have equally strong proof that it is time for a change. Disinfection was practised long before the cause of disease was understood, and of course was carried on in a very haphazard way. It is within the memory of many here when the small bag of camphor was hung about the neck as a sure preventive of smallpox and other infectious diseases, and this was done by the most intelligent. Bowls of carbolic acid, the fumes of which permeated the atmosphere, were found in sick rooms as well as in the rooms of the healthy, to prevent disease. These simple things were done by the laity. The physicians were more strenuous in their methods. When smallpox, diphtheria or scarlatina occurred, houses were placarded, all inmates confined, constables placed at the doors and the whole premises closely quarantined for a long period. After the patient was cured or dead, the bedding and indeed everything that came in contact was burned, even the house in some instances went up in flames. This, of course, was in days when drastic measures were used. Then followed a period when we did away with constables and we trusted to the honor of the people, but we still destroyed clothing, etc., with fire. The results were just as good as when constables were employed. Gradually we got into the way, instead of burning the clothing, of depending almost entirely on fumigating with sulphur and soaking clothes in carbolic or bichloride, and the results were just as successful as when more drastic means were used. Now after isolating the case we not only do not destroy clothing, furniture, etc., but some of us are wicked enough to allow the children out in the yard to play, the bread-winner goes to his work under certain restrictions, and we shorten the period of quarantine very considerably, and the results are just as good as before. In Nova Scotia we have not yet got further away than that, for our laws compel us to follow certain regulations, but in New York, Providence and other places terminal disinfection is a thing of the past and the results are at least as satisfactory.

While it is quite true that the theory that clothes do not carry infection is not generally accepted, it is a safe statement that it is becoming more generally accepted, and scientific evidence as well as practical observation lends support to this theory. It is a fact beyond dispute that disinfection as practised generally is done very imperfectly. It is doubtful if any officer present, giving a candid and frank statement, will deny that in his district houses have been fumigated and disinfected by the family, of course under his instructions. Indeed perhaps only one room is disinfected, and in some instances houses have not been fumigated at all, and yet it has been found exceedingly difficult, if not impossible, to trace any infection to these houses. In New York the officers of health for the past number of years go in and out of infected houses without protective gowns, and in no instance has a case of infection been traced

to them, either in their own houses or outside. It is contended, and I think more or less conclusively, that clothing, etc., seldom if ever carries infection. If this contention is correct how then is disease spread? What is the medium of infection and how best can we prevent and control it?

(1) By contact.

(2) By infection through flies, lice, mosquitos, etc.

It is now generally conceded that diphtheria is spread through contact with the person having the disease, and occasionally through contact with diphtheria carriers. The same probably applies to scarlet fever and certainly to measles, especially before the rash appears.

Yellow fever, which formerly was believed to be caused by infection from the clothing and individuals, is now known to be caused by a bite of a mosquito.

Typhus fever, a short time ago dreaded as one of the most infectious diseases, is now known to be due to the bite of the body louse.

Plague, the most dreaded of all diseases in years gone by, is now known to be caused by the bite of a flea.

As our knowledge increases and as investigations go on we will discover that infection spreads in this way rather than through clothing, and that disease spreads by "persons not things, and the public should know it," and guard themselves accordingly.

Is infection carried by the air? The more the contact theory develops the less belief there is in aerial infection. It is conceded that aerial infection may occur by means of droplets due to speaking or coughing upon anything near at hand.

In a very excellent paper written by Dr. Whitelaw, of Edmonton, and published some time ago in the Public Health Journal, he gives the following information: "That Rosenau in his work on Preventive Medicine and Hygiene states that communicable diseases are not conveyed from man to man or even from bed to bed in well managed hospitals. In the Kingston Avenue Hospital, in Brooklyn, various diseases, as smallpox, measles, scarlet fever and diphtheria are treated in wards only a few feet apart with no evidence of aerial transference. At North Brothers' Island similar methods are followed with equally good results. At the Pasteur Institute, Paris, patients are each cared for in a separate ward opening into a common hall. In two and a half years there were treated 2,000 persons, of whom 524 had smallpox, 443 diphtheria, 126 measles, 163 erysipelas, 92 scarlet fever, and 166 non-diphtheritic sore throat. During this time the only evidence of transfer of infection was the development of four cases of smallpox and two of measles. In the Children's Hospital, Paris, where the beds are separated by partitions only, there were but seven cross infections, six of measles and one of diphtheria among 5,017 cases, and these were attributed to lapses of aseptic precautions. In England similar methods have been tried with success in various hospitals. Dr. Chapin, of Providence, in his work on Modes and Methods of Infection, has gathered a mass of evidence which supports contact infection as the chief factor in the spread of disease."

If contact then is the cause of disease what should be done to prevent the spread of disease:

1. Early report, and isolation of the patient and of those who have come in contact until the danger period is over.

2. Aseptic precaution by those in attendance on patients.

3. Cleaning every day the room occupied by the patients and destroying mouthwipes, etc., used daily.

4. Until it is scientifically proved that infection is not caused in any other way, soaking clothing in bichloride and washing floors and walls with same.

5. Thorough housecleaning when disease is over.

CEREBROSPINAL FEVER, FROM THE STANDPOINT OF EPIDEMIOLOGY

By ALBERT G. NICHOLLS, M.A., M.D., D.Sc., Captain A. M. C., Director of Public Health Laboratory, Halifax.

(Association of Medical Health Officers of Nova Scotia, July 4th, 1916.)

EPIDEMIC cerebrospinal meningitis, better termed cerebrospinal fever, has come into an unwelcome notoriety in this country within the last two years. Previous to this we heard but little about it, though it has been more or less prevalent in various parts of Canada for eighteen years, though never to the extent that one could term epidemic. It is impossible to get accurate information in regard to the extent of its incidence owing to the loose way of reporting vital statistics in vogue until comparatively recently, and the unfamiliarity of the general practitioner with a rather occasional disease. In Montreal, the earliest undoubted case that I know of, confirmed by autopsy, occurred in 1898. Since that date the affection has cropped up at intervals. In the four years, 1910-1913, one hundred and six deaths were reported in that city as definitely attributed to the disease. In Nova Scotia it prevailed in epidemic form about twelve years ago, but does not seem to have reappeared until the fall of 1914. Between October of last year and the present time there have been 68 cases reported to our Provincial Health Officer, distributed according to counties as follows:

Cape Breton, 11; Antigonish, 5; Guysboro, 3; Pictou, 9; Cumberland, 2; Colchester, 10; King's, 3; Annapolis, 2; Digby, 1; Queen's, 4; Lunenburg, 1; Halifax, 15; Hants, 2.

From personal knowledge of conditions existing in Halifax during this period, I am satisfied that the figures returned for that county are far too low. Including military and naval cases, sixty would be nearly correct, making a total of 113 for the whole province. A study of the returns reveals the fact, noted also in other countries, that the disease is much more prevalent in cities and towns than in rural districts. Thus of our 113 cases, 104 were urban and only 9 rural.

It is somewhat difficult to come to any precise conclusions as to the prevalence of cerebrospinal fever in the civilized world. The germ of the disease was discovered by Weichselbaum of Vienna in 1887, but his results were not generally accepted for some years. The character of his organism and its specific pathogenicity were for long not adequately understood. Only within the last two years can we say that it has been studied with any completeness, and much still remains to be elucidated. Part of the trouble lies in the fact, that, like the diphtheria bacillus, the Weichselbaum meningococcus may be present in the human body without causing its specific lesions, and, contrariwise, these lesions may be closely simulated as a result of infection with other organisms. Thus, the meningococcus has been found associated with conditions that are not meningeal, such as nasopharyngeal catarrh, tonsillitis, influenza (so-called), and arthritis. It is present in the nasopharynx of a certain proportion of healthy individuals. A large amount of experience and experimental work was necessary before it became possible to appraise the exact role of the meningococcus as a disease-producer. Further, it is certain that sporadic cases of cerebrospinal fever have escaped recognition in many instances, or, not have been inadequately studied from a bacteriological standpoint. We may add that the question has been obscured also by failure to adopt a uniform and accurate nomenclature in statistical returns, and that it is only within very recent years that the disease has been notifiable. Moreover, the difficulties in diagnosis are in some cases by no means inconsiderable, particularly as they present themselves to the physician who has only seen the occasional sporadic affection. There can be no doubt, however, that the disease has been widely distributed, that it is practically endemic in all countries, particularly in cities, and that epidemics break out only at compara-

tively rare intervals, as a result of the operation of special conditions. The correctness of this statement will hardly be disptued, when we realize that it has been proved that meningococcus infection is not infrequently present in a community "in disguise." Some of the "colds" in the head, bronchitides, catarrhal sore throats, and "influenzas" are beyond question of this nature. The work of Still and others, too, has shown that the so-called "posterior basic meningitis" of infants and young persons is due to the Weichselbaum meningococcus.

The facts that the meningococcus is an organism of low vitality, as is proved by the difficulty in obtaining cultures from material containing the germs even in abundance, is speedily killed out by slight deviations in either direction of the optimum temperature, and is very susceptible to drying, would appear to negative the view that the specific infection can be carried by dust, insects, food, or clothing. That epidemics occur in communities only at wide intervals under the conditions, postulates the intervention of the "carrier."

There are three classes of "carriers": First, those who have recovered from cerebrospinal fever, but still harbor the specific micrroorganism in their noses and throats; second, those who have been in contact with cases of the disease and have acquired the germ; third, those who appear to be in good health, who presumably have not been in contact with known cases, and yet harbor the germ, the so-called "normal" carriers.

It is impossible to form an accurate estimate of the numbers of all or any of these classes of individuals, for it is only within the last few years that observations have been made in these directions, nor until now have bacteriological methods been sufficiently perfected to give us trustworthy results. Still, with what information we possess, we may come somewhat near the truth.

In regard to the question how long the meningococcus may persist after convalescence, the observations of Dr. W. M. Scott (Reports to the Local Government Board, New Series 110, 1916) go to show that in 50 per cent. of cases complete convalescence has occurred before the nasopharynx is free. The maximum period of potential infectivity is not settled but is more than three months.

So far as I can gather, about 27 per cent. of "contacts" become "carriers," though it is a singular fact that only a very small proportion of these develop meningitis themselves. They may, however, pass it on. It is the general consensus of opinion among hospital and institutional physicians that epidemic cerebrospinal meningitis, even when not isolated but treated in a general ward, rarely spreads to the nurses, doctors, or other patients.

The number of "normal" carriers ordinarily at large in a given community is hard to determine. Kutscher swabbed 56 persons suffering from slight catarrhal affections of the upper respiratory passages and obtained cultures of an organism indistinguishable from the meningococcus "morphologically, culturally, and in the immunity reactions" in four. These, perhaps, should not be regarded as normal persons. Hubener and Kutscher, following up this work, examined the throats of 400 soldiers in a regiment which was free from cerebrospinal fever, and found meningococci in eight. This regiment several months previously had been quartered with a regiment in which cerebrospinal fever had occurred. The figures of Mayer, Waldmann, Furst, and Gruber (1910) are the most extensive with which I am acquainted. Examining the throats of 1911 soldiers in garrison, at a time when cases of cerebrospinal fever were occurring, they discovered that 2.46 per cent. were carriers. Examining 9,111 men in garrison in Munich, who were healthy presumably, and at a time when meningitis of this type was not prevailing, they found 1.73 per cent. to be carriers. Dr. Eastwood (Reports to Local Government Board, 1916) in 480 instances taken from the outpatients attending the aural department of St. Bartholomew's Hospital, found 10.2 per cent. to give positive results. These were not contacts. Moreover, it was not found that a conspicuously large portion of these positive cases presented pharyngitis. Being hospital patients, these, again, perhaps cannot

strictly speaking be called "normal" carriers. Dr. W. M. Scott examined the throats of 138 persons at the outpatient department of the Lambeth Infirmary. Twenty-six were normal individuals; the rest suffered from chronic coughs, rheumatism, "bad legs," etc. None, so far as was known, had ben incontact with meningitis cases. 13.7 per cent. were positive. So far as can be judged from our imperfect information, taking all classes of the community ill and well alike, it would seem probable that about 2 per cent. of healthy individuals harbor the meningococcus under ordinary conditions.

Before, however, epidemics of meningitis can break out something more is necessary than the mere existence of "carriers." The "carriers" must infect either themselves or others. Considering the very small number of cases of disease in proportion to "carriers," and the only occasional appearance of epidemics, as well as for other reasons already cited, it is evident that the meningococcus is an organism of low vitality. Evidently, then, the susceptibility of infected individuals must have been increased, or, otherwise, their resistance lessened. Here we have a somewhat close analogy with the case of the pneumococcus. Sternberg found that 80 per cent. of persons, taken at random, harbored the pneumococcus in their throats. Notwithstanding this enormous number of carriers pneumonia is relatively infrequent. The deaths from pneumonia in this province average 500 yearly. The death rate in this disease being about 20 per cent., we may infer that there are 2,500 cases annually. Taking the population of the province to be 500,000, of whom 400,000 are pneumococcus carriers, the proportion of cases to carriers is, therefore, 1 to 160. In the cases of epidemic cerebrospinal meningitis, 2 per cent. of "carriers" amongst our population means 10,000 potential disseminators of infection. Seventy-five cases of cerebrospinal fever in one year means a proportion of cases to "carriers" of 1 to 133. Probably, the parallel between the two diseases is not fairly established, inasmuch as in the case of meningitis we are dealing with a very few cases developing during much too short a time. In other respects, at any rate, pneumonia and cerebrospinal fever present close analogies. They exhibit the same seasonal variations, being both more prevalent during the winter months and at the turn of the seasons; they are diseases of the young and vigorous; while usually endemic, they both may occasion epidemics, though such are generally of small proportions. However, it must be said of cerebrospinal fever, that while fewer people are likely to contract it, the mortality is much higher (30 per cent. under the most favorable conditions; 80 per cent. under the most unfavorable). This, doubtless, is to be explained in view of the more vulnerable and important structures involved in this disease.

So far as our knowledge goes, the factors which govern susceptibility in cerebrospinal fever are, age, season, climate, and social environment. No age is immune, but the disease is overwhelmingly more prevalent in children and young adults. One of my cases, however, occurred in a man over sixty.

With regard to season, most cases occur between October and June. Statistics from other countries agree, I think, that April is the worst month in this respect. So soon as the warm weather of summer comes, and the thermometer ceases its vagaries, the disease dies out.

The influence of climate is hard to estimate. On general principles one would think that a cold, wet, windy, and especially a changeable, climate, as inducing catarrhal troubles of the respiratory passages, which predispose to the more serious infection, would be of importance. Some authorities doubt this, however, as a low temperature is inimical ot the development of the meningococcus. If the former view be correct, we are confronted with the apparent paradox that the same influence which promotes infection tends to cure it. In my experience, catarrhal troubles of the respiratory tract, at least in an obtrusive degree, are not common as precursors of cerebrospinal fever. I take it, however, that these somewhat speculative considerations are rather futile after all. The truth may very well be that an individual carries about the meningococcus for a time in his nasopharynx; exposure to wind and weather gives him

a "cold"; the meningococcus makes a speedy entry into his dilated nasal capillaries and lymphatics; and infection becomes an established fact. The state of the weather matters little after this.

Social environment appears to count for more. Experience has shown that most cases of cerebrospinal fever develop among those who, possibly previously in the best of health, have been crowded together under conditions of food and housing to which they have been unaccustomed. We find the disease very commonly, therefore, among soldiers and sailors, young recruits by preference. These men often live in badly-ventilated barrack-rooms, with dusty floors foul with expectoration, and, besides, are exposed to unaccustomed weather conditions and exercise beyond their strength. Granting such conditions, there must, even yet, be very close association with the carrier before these persons become infected. It is those who sleep in barracks on either side of the carrier, and those who mess with him that run the greatest risk. The measures found most efficacious for checking epidemics of cerebrospinal fever, as they occur among troops, consist in minimizing the dust nuisance in barracks, suppressing spitting, establishing free ventilation, and keeping the men out of their sleeping quarters until they are to retire. General hygienic measures are of the utmost importance, in a word. When the disease has broken out a systematic search for "carriers" should be made, and such segregated until cultures from their throats prove negative on two successive occasions. The most rigid measures of isolation of the patients, and disinfection of their clothing and bedding, should be instituted.

The precautions to be adopted in the case of the sporadic outbreaks of the disease, as they occur in the household, are of more importance to us at this time. In general, we should institute the same routine measures to prevent the spread of the infection as we would take in a case of typhoid fever. The patient should be strictly isolated; the urine, faeces, discharges from the eyes, nose, and mouth, should be disinfected. Dishes and bedding of the patient should be kept separate from the rest, and be disinfected immediately after use. Nurses and doctors should wear large protective aprons on entering the sick room; on leaving, the hands and face should be well washed, and a disinfectant and cleansing spray used on the throat and nose two or three times daily by all who come in intimate contact with the case. The urine and faeces of the patient, as well as of all contacts, should be disinfected until it is certain that the possibility of contagion has passed. Systematic spraying of the noses and throats of the patients should be persisted in for at least three weks after convalescence has been established. A spray of peroxide of hydrogen (1 per cent.) has been recommended for this purpose. Some think a nasal douche is better, as leading to a more thorough cleansing of the parts.

Whatever substance is used, it is important that it should be bland, and dilute enough to be unirritating. These measures may be dropped so soon as repeated cultures from the nasopharynx show this region to be free of meningococci. When it is impracticable to take cultures, and it often is, spraying should be kept up for at least three weeks, and the convalescent should be isolated from the rest of the family to the extent that he has his own room, clothing, and dishes, his belongings being kept strictly away from those of other members of the household. It would be better to serve his meals separately, and have the dishes, clothing, and linen washed by themselves. The total length of time during which these latter tactics are to be pursued should be an additional three weeks.

The Great Consulting Room ofn
Wise Man is a Library—Dawsoa

MILK AND ITS HYGIENIC RELATIONS—By Janet E. Lane-Claypon, M.D., D.Sc. Lond.—Published under direction of the Medical Research Commitee—With eight plates and diagrams in the text.

This work, though convenient in form and volume, is encyclopædic in scope. Here is indexed, classified and presented all that is known about milk. The accumulated results of innumerable experiments and unwearied investigations as to composition, properties, functions and effects of milk, not only in its normal condition, but also in its many modifications—Pasteurized, centrifuged, sedimented, heated, cooled, malted, peptonized, and predigested, are at home here to all comers.

The gifted author shows by example what happens when a capable woman takes the professional ribbons in hand and drives a scientific investigation and records its results.

No one who wishes to be thoroughly informed in the literature and statistics of this subject can afford to ignore such an argosy of research. The scope of the work may be imagined when it is stated that one chapter alone—chapter vi.—has note taken of ninety-nine bibliographical references.

Here is the last word on bacteria and their power to resist the attack of heat and other germicides. Here is stated the comparative merits of shorthorns, Jerseys, Holsteins, etc. Nothing about milk near or remote seems to have been omitted. Thirty-six columns of matter is indexed, and several full-page plates and appendices add to the convenience and effectiveness of this remarkable storehouse of knowledge about milk.

Longmans, Green & Co. have put their best work into the exterior and have presented the colossal labors of the author and editor in a form concise and inviting.

THE INTESTINAL PUTREFACTIONS—Clinical Studies on Enterocolitis—By Charles Fenner Peckham, M.D.—Snow and Farnham Co., Printers—1916—Price $2.00 nett.

This, a careful study of entero-colitis, a subject too lazily known even by the medical profession, for the second stage is little understood and the third often mistaken for simple or pernicious anæmia or acute inflammation, etc.

The volume includes a thorough study of micro-organisms found in the intestines, the details for the examination of feces, and a resume of the various forms of intestinal putrefactions. A chapter on Malaria, syphilis and tuberculosis as intercurrent affections, and one on anaphylaxis as a concomitant of entero-eliotis, add to the value of the work, which is completed by an exhaustive presentation of the best treatment for the various types of the affection.

In the general considerations with which the volume closes our author is inclined to believe that under-eating is more pernicious than over-eating, that constipation is not incompatible with long life, that the amount of canned goods varies inversely as the thrift of the family using them. "It is shameful," he says, "to find tin cans labelled Pork and Beans on the premises of any self-respecting farmer."

A simple life, less worry, a less hectic pursuit of pleasure, plainer and better food, evenly balanced diet, fewer condiments, avoidance of habitual catharsis, and more fresh air and sunshine are the desiderata urged by our author for the prevention of this disease so wasteful and destructive of human lives.

CANADIAN POETS

XXX

LAURA E. McCULLY

Miss McCully's poetry is enriched by classical illustrations, and expressed in forceful and melodious language. Her imagination relates us to the universe and to humanity. Wordsworth found new lessons in the fields and woods, and taught them; Lanier made trees, flowers and clouds our intimate friends; when we read Miss McCully's nature poems we are not conscious of the moralizing of the poet, we are in the glens ourselves listening to bird-songs or pine psalms, or on the hill-top looking at the afterglow, with the purity, the glory, the growth spirit, and the transforming beauty of nature flowing into our lives. In a few flaming lines her stories reveal the love, the despair and the ultimately triumphant faith of humanity. With tender pathos she unveils the evils of social and industrial conditions, and in clear tones arouses each soul, and makes it conscious of the splendour of the better conditions ahead, and thrills it with the determination to achieve for justice, freedom and truth.

—James L. Hughes, LL.D.

IN a very real sense Miss Laura Elizabeth McCully, M.A., is a Toronto writer, as, with the exception of one academic year, in the United States, and a few months in Ottawa, she has lived all her life in this city.

She is a grand niece of the late Hon. John McCully, of Truro, Nova Scotia, one of the Fathers of Confederation; and is the daughter of Samuel Edward McCully, M.D., and Helen (Fitzgibbon) McCully. Her father is of Manx descent, and her mother is a descendant of the late James McBride, of Halton county, Ontario, magistrate, who was one of the pioneers of this province, and who heroically cleared off

forest and left to his heirs, one thousand acres of valuable farm lands.

Miss McCully was educated at Deer Park Public School, Jarvis Collegiate, and University College. Throughout her University course she stood high in the class lists, and graduated in 1909 with first-class honours in English, History, French and German. She was and is particularly attracted to the ancient Anglo-Saxon language, and her written theses on this branch of study, together with the recommendation of her teacher, Professor David Keyes, M.A., procured for her a Fellowship in Yale College. In this Institution she studied for an academic year (1909-10) under the well-known author of text-books in Anglo-Saxon, Dr. Albert S. Cooke.

Miss McCully is proficient in athletics; and is an ardent advocate of the rights of women, political, professional and industrial. She has firm belief that this century will fully establish equality of sex and of racial responsibility.

Her first book of verse, *Mary Magdalene and Other Poems*, was published by the Macmillan Company of Canada, Limited, in 1914. It contains fifty poems of such quality that one feels, after several readings, that this young poet must yet climb far up the heights of poetic achievement.

CANOE SONG AT TWILIGHT

Down in the west the shadows rest,
Little grey wave, sing low, sing low!
With a rhythmic sweep o'er the gloomy deep
Into the dusk of the night we go,
And the paddles dip and lift and slip,
And the drops fall back with a pattering drip;
The wigwams deep of the spirits of sleep
Are pitched in the gloom on the headland steep.
Wake not their silence as you go,
Little grey wave, sing low, sing low!

From your porch on high where the clouds go by,
Little white moon, look down, look down!
'Neath night's shut lid the stars are hid,
And the last late bird to his nest has flown.
The slow waves glide and sink and slide
And rise in ripples along the side;
The loons call low in the marsh below,
Night weaves about us her magic slow,—
E'er the last faint gleam in our wake be gone,
Little white moon, look down, look down!

OUR LITTLE SISTER

Weep, little shrinking spirits of the woods,
Hang down your fair, green faces, all ye leaves,
And dews be heavy on the year's first-born,—
Yea, weep as rain, all ye that breathe of spring,
To-day I passed her in the city streets!

Surely the kind brown earth must pity her,
Nursing its young so safely at the breast,
All the great winds that no man may defile
Compassionate her, and the bending trees
Happy in fruitfulness and blest with song!

But where her feet are set of all God made
No stone remains; and wearing childhood's face
Fixed in an awful lethargy and calm,
Defiled, defiling, yet accusing not,
Avenged upon her race, she passes on.

THE TROUBADOUR'S LYRE

Sing low, my precious lyre, low in each string,
Thou wast not framed for exaltation's burst,
Or chant sustained, straining thy golden chords,
Sing low, sing low, thou constant friend, my lyre!

For now we two may wander forth in peace,

Shattered our shackles are and stricken
from us,
And we shall rise and steal out into the
world,
Singing all day, on every way, my lyre.
Like Orpheus have we two sojourned
through hell,
And with our eyes seen evil, nor availed
To wrest their treasure from the envious
shades.
Therefore come forth, leave to the Gods
their world!

If we should find that orchard lamped with
gold
Of heart's desire, fasting will we pass on,
Nor rifle one small, new-blown wayside
flower,
But bless its beauty, pass, and passing, sing.

Thus shall we travel light of foot and free,
And call the world our garden and the
woods
Our house, and hear the great winds call
to us,
And sometimes feel the dripping of the
dews
In lonely places. Come, for we are free.
O lyre, heart of my heart, formed for the
wind
That is God's breath, and not for human
hands
Jangling amid the strings, come, let us go!

A BALLAD OF THE LAKES

My love she went a-sailing
Ere yet the day was done,
And a wind blew up, and a wind blew up,
Straight out of the setting sun.

I sat on a rock a-fishing,
Where flashes the bronze-black fin
And the eddies swirl and suck and curl
When the river tide comes in.

She hailed me from the headland
And I saw the brown sail swing
Till the rope ran tight and it lifted light
As the sweep of a wild duck's wing.

'O where go ye a-sailing,
For the day will soon be done,
And see the shroud of shifting cloud
That's following up the sun?

'It's off I am to the eastward,
To the rim of the world away,
Ply sail and oar for the far-off shore
And none shall bid me stay.'

So she sailed away to the eastward
To the far horizon's rim,
Where rosy kissed through a veil of mist
The line of the shore lay dim.

And the sun sank down the marshes,
In a field of flame he rolled,
The heaving track from the boat slipped
back
Like a path of molten gold.

Each little wave seemed smiling,
Lips curled in a rosy bow,
Like a babe asleep on the breast of the deep
That rocked it to and fro.

And I sat on my rock a-fishing
While further down the west
The sun sank slow to his bed below
In the marshes' swaying breast.

Sudden a white owl hooted
From his nest in the pine hard by,
And a whip-poor-will sent an answer shrill
From the depths of the flaming sky.

I looked away to the westward
And there I saw it stand,
A cloud pure white and small and bright
As the palm of an opened hand.

One leap to the jutting headland,—
Like a blow it stung my face,
The cap of wind with the threat behind
Of the squall that comes apace.

Out on the lake there widened
A wreathing ring of black,
And the spreading cloud like an out-flung
shroud
Promised the coming wrack.

The waves rose white and frothing,
With a hiss like a rattle-snake
That glides at night past the lantern's light
On the path through a slimy brake.

Have you seen the inland waters
When the black squall rides the wave?
For it comes like light and there is no flight,
And you call on God to save,

As I, one breath, 'Save, save her!'
And I plunged in the driving roar,
For my light canoe pierced through and through
Lay high on the rocky shore.

Clean stroke, long breath, poised body,
They laugh at your manhood's pride,
The billows that seethe and drive in your teeth
When the breath cramps in your side.

A quarter-mile to the headland?
Ten miles of boiling hell!
Blind, choked and stung, bruised, tossed and flung
In a world that heaved and fell.

But once, from the crest of a comber
The gleam of a distant sail,
As slight a thing as a butterfly's wing
Tossed into the teeth of the gale.

On, on, is your blood turned water?
Shall a straining muscle's pain
Though it snap like tow speak louder now
Than the cry of heart and brain?

In my ears the roar of thunder,
In my eyes a spray blood-red,
But once I sank, lost wind and drank,
And something snapped in my head.

Do you know the way of the waters
When their sudden wrath is o'er?
Rubbish and wrack they cast safe back,
And they cast me on the shore.

Do you know the way of the waters,
The hungry, restless wave?
They take for toll a living soul
And no man knows the grave.

Then search no more by the marshes
Where the moon stands up so white,
Has never a bird through the silence stirred
All the long, bright summer night.

Then seek no more by the river
Where the water lilies gleam,
So pale and still, so ghostly chill
Like a dead face in a dream,
For the eyes may ache with seeking,
They may search till they see no more,
And the heart grow old and the pulse beat cold
Ere my love comes back to shore.

MARY MAGDALENE SOLILOQUIZES ON LOVE

Sing, heart of spring, along the winter ways,
Go lightly feet, 'twas here His footsteps fell,
The birds sing of Him for he counted them
And knew them all, the little winged loves
Like happy thoughts! Yea, every leaf that kissed
Him passing in the garden hath such life
As puts our immortality to shame.
The winds are pregnant with His message now,
The Universal, all-uniting winds
That know no limitation, like the spirit
Of mighty truths, sweeping creation's bounds,
Disdaining man-made barriers, change and time.
Yea, since He came, sing resurrected soul,
As nature sings, through winter unto spring!
For now the ancient curse is past away,
The simple way and straight made plain to man
And love exalted, love revealed, proclaimed
Not love that self has sought for selfish ends,
Nor love possessing or possessed, but love
Creating, sacrificing, binding all,
Conceiving good but as the good of all,

Laying down life that life may be fulfilled
In the new life that springs a thousandfold
More rich for sacrifice. O perfect bliss
Which man alone of all creation failed
To grasp, to comprehend! See how the earth
Meekly and sweetly, with a sure content,
Lays down the old year's leaves, yields to the wind
Her precious, garnered seeds, nor makes complaint,
But in her heart, all lowly, sings of spring;
See her emerge from tempest, recreate,
Instinct with life, noble and large and calm,
At peace with the infinite purposes of God!

Sing, heart of spring, along the wintry way
His blessed feet made glad. Weep not for Him,
Nor for the world, nor for thy human pain.
Could'st thou have died as He did, who could rend
That place from thee? Most perfect was His part,
But thou hast thine, to succour, heal and teach,
Even as He, perchance to die as He
For man. Sing, happy heart, along life's way
For joy and love are met in thee and life
Wells new within thee, sing for spring is here,
Sing, for thine eyes have seen the Risen Lord!

RESOLVED THAT MODERN SANITARY MEASURES ARE CONDUCIVE TO THE IMPROVEMENT OF THE HUMAN RACE

Paper Read in a Debate by Thomas Watson, Member Royal Sanitary Institute, Provincial Sanitary Inspector, Saskatchewan.

IT WILL BE impossible in the time at our disposal to enumerate and notice all the sanitary measures that have conduced to, or are contributing to the improvement of the race, but some of the chief means, will, we contend, be sufficiently convincing in support of the resolution.

The scope of our subject you must observe is comprehensive; it embraces the human family. Sanitary measures are enacted and employed not for the individual, but for the benefit of the whole people collectively. Further, in order to keep strictly to the text of the resolution, let us define "sanitary measures," and then bear in mind that we must show clearly that improvement, whether physically, mentally, morally or spiritually has been the result of those measures.

Sanitary measures are those pertaining to, tending or designed to promote health. Sanitation is the science of sanitary conditions, and of preserving health, and is synonymous with hygiene, or as the late Professor Parkes puts it, is "the science which aims at rendering growth more perfect, decay less rapid, life more vigorous, and death more remote."

Sanitary measures, then, are all the means employed for the public good, which has brought about that improvement to mankind, which we claim has resulted by their employment.

We must confine ourselves to modern measures, but where can we draw the line as to what is ancient? Suppose we restrict ourselves to the period when the first P. H. A. in Britain was passed, viz., 1838, as roughly speaking a century, our opponent cannot then claim we are borrowing from the ancients.

During the period within which we propose keeping, it is wonderful what investigations have been made into the causes of disease, and how remote the causes have something been found. Some of us can remember the time when the courts, alleyways, and even the streets in the old lands were unpaved, a condition which prevented them from being properly cleaned, indeed it was common for them not only to be littered with all manner of animal and vegetable organic material, but to have reeking accumulations of animal manure. In the courts and lanes were cesspits or pools of putrifying liquid matters which soaked into the soil, causing a never-ending nausea from the septic action, and continually giving off gases, which being inhaled, lowered the vitality of those unfortunate enough to live in the vicinity.

In the overcrowded districts of cities it was observed that disease in its worst forms, but chiefly of an infectious nature, was ever present. After the passing of the P. H. A. which authorized local authorities to take many hitherto undreamt-of sanitary measures, a gradual awakening to conditions existing among the working classes took place. Among the first measures to receive attention was paving. The Corporation of Liverpool, a city which has always been in the van in matters pertaining to health and education, began to pave its streets, and to insist that courts common to large numbers of tenants be paved, so that the city scavengers could cleanse in some degree the filth which accumulated. It did not take long for medical men and others to notice improvement in the health of the residents.

This measure of paving led to many discoveries, the chief perhaps being, that it was found many of the ground floors of dwellings were at a lower level than that of the courts. The results of paving and the resultant drying of the soil surrounding dwellings were as immediate and apparent that the case rate of diseases in one district, in which were 57 houses, fell from an average of 85 to 16, and there

was a corresponding decrease in the death rate. So much for Liverpool!

The same improvement was noticeable in many other boroughs, and also in the crowded areas of London.

Reading recently of the insanitary conditions which existed in Paris in the early years of the last century, similar conditions prevailed, but the effect of the authorities persisting in having all thoroughfares paved and flushed with water, had improved the health and comfort of the people, but we are unable in this instance to give any statistics.

In Mexico as recently as 1880, few even of the principal cities had any provisions of a sanitary nature, the streets were badly paved, and the only scavengers were the numerous dogs which prowled in multitudes in that country. Cholera, malaria, yellow fever and other tropical diseases were so common at certain seasons that all those who could afford the expense retired annually to the higher altitudes to escape the annual plagues which decimated the common people.

About 1890 reforms were begun by grading, draining and paving, until now the measures which are exercised have so improved conditions that it is no longer left to dogs to dispose of the filth, and residents are fairly immune from the diseases which were once so prevalent.

In many of the cities and towns of South Africa, attention to paving has abolished many naturally formed cesspools to the improvement of the comfort as well as the health of communities. So much for pavements as a modern measure in contributing to the physical and moral improvement of mankind.

The very fact of those in authority being brought into cognizance of the conditions under which so large a portion of their fellow beings were living, led to enquiries respecting overcrowding of dwellings, and the evil and demoralizing influences arising therefrom. This congestion in many areas caused not only municipal but Governmental authorities to enquire into the housing problems. Commissions were named to make surveys and report on conditions, and to suggest remedial measures, which later led to the enactment of the first "Housing of the Working Classes Act." The reports of the Commission did much to show that crowding of buildings on ground with insufficient room for free air-space was responsible for much disease, for moral delinquency and a general lowering of the mental and spiritual ambitions of the people.

The early results of the housing acts were soon apparent, and the making of sanitary authorities responsible for the working of their provisions led to many measures which were beneficial. The first act gave power to sanitary authorities to put in force provisions dealing with common lodging houses, houses let in lodgings, overcrowding of rooms, and also power to enact by-laws governing the construction, air-space and ventilation of new buildings, all of which were measures leading to improvement of living conditions.

Prior to 1838 the average death rate in England was about 31 per 1,000, while in some areas in cities as many as 80 deaths per 1,000 occurred annually.

Before giving statistics showing the reduction of the death rate as the result of housing measures, plus paving and drainage, let us review some of the sanitary measures instituted as the result of the Health of Towns Commission, a commission which was accused at the time of doing nothing but issuing Blue Books. The report of this commission crystallized and brought into active existence and operation many measures which we claim were all sanitary; such as the improving of the ventilation and sewerage of towns; water supplies; establishment of public baths and wash-houses; public libraries; public lectures on hygiene and temperance; and outdoor exercise; all contributing to the improvement of the health and wellbeing of the people physically, mentally, morally and spiritually.

Now look at some figures. We have seen the average death rate in 1838 was 31 per 1,000; this was reduced gradually till in 1870 the rate was 22.6, and at the present time, with the better application of measures similar to those described, aided by greater research into the science of hygiene and the cause of disease, the rate is now slightly over 16 per 1,000.

What is true of Old England is equally true of other nations. Although we have

a new country here in Canada, and our profession is just beginning to exert its influence in a small way by applying the elementary methods of the science of sanitation we have reason to congratulate ourselves on the progress being made in improving the health and comfort of communities. Have not sanitary measures employed by cities and towns when they have ben methodically employed reduced in a remarkable degree the typhoid scourge? We can point to a substantial reduction of cases in this disease. In 1910 for the four principal cities in Saskatchewan there were 396 cases reported; in 1911, 344; in 1912, 441; in 1913, 540; in 1914, 178. Without considering population these figures would appear to show an annual increase, but such is not the case. We must remember that the estimated combined population of these cities in 1910 was only 50,000, whereas in 1914 it had risen to 100,000, and also that in each year a better and more correct system of reporting was being obtained.

In the matter of dairies and the production and sale of milk we can also point to improvement beneficial beyond compare. By methodical and regular inspection of milk supplies in various countries the death rates among children under five years have been materially reduced. In London from 1895-1900 it was 148 per 1,000 and in 1906-7 it had fallen to 116. In Liverpool it fell in the course of six years from 180 to 144. In Munich from 182 to 146. Birmingham, 182 to 147. Brest, 137 to 100. Similar reductions resulted in many of the States, for instance in the District of Columbia in four years the rate fell from 135 to 109 and again in the following four years to 97.

The inspection of foods under The Sale of Food and Drugs Acts, the Pure Foods Act and other modern measures is producing beneficial results in all countries where these sanitary provisions are observed.

Coming now to disease of an infectious and contagious nature it cannot be gainsaid that the modern preventive measures employed have not only modified the virulence of infection, but have prevented in large measure the spread of what in bygone days was looked upon as the visitation of an angry God. We now know that such diseases are the result of disobedience to natural laws, and that if we observe the laws of health and take reasonable care against mingling with those unfortunately affected we are practically immune. Many of the measures taken in connection with infectious diseases, such as removal and disposal of excretions; the use of anti-toxins and vaccines; and preliminary disinfection are all measures of compartively modern utility and have all contributed to the benefit of the human race. The discovery of bacteria, and the researches of scientists has multiplied the means which sanitarians can employ in prevention of disease.

At this time when so many nations are embroiled in the confliet of war, we should observe the benefits obtained by the application of sanitary science among the armies and navies of the several nations. No longer do the ravages of enteric fever, typhus fever, ague, scurvy and cholera decimate the soldiers or sailors engaged in fighting our battles, among those nations who employ the many preventive modern methods and prophylactic agents now available. The observation of regular habits in cleanliness, variety and quality of diet, and the improved quarters provided have been found profitable in saving lives and adding to the efficiency of every unit in the service. The contrast compared with conditions obtaining fifty years ago, when disease claimed a larger percentage of deaths than bullets in battle, is proof that modern methods are improving both the morale and contentment of those in martial service.

Most of the measures to which we have referred have ben quietly and unostentatiously pursued in the best interests of humanity. We may here mention a few important discoveries. The common house fly has been found to be the medium for carrying and spreading the germs of disease and death to an extent almost incomprehensible; that, through sanitary measures chiefly, such as the application of oil to malarial swamps, and the clearing and opening up to currents of air, of deadly rank fungus infested areas of vegetation, converted what was known as the "White Man's Grave," of British West Africa, into a promised paradise of healthy habitation; that the measures found and taken

to combat the disease known as "sleeping sickness" in Equatorial East Africa promises to make the district safe and habitable for settlement; and last but not least in importance the measures which made possible the construction of the Panama Canal, bringing to workmen employed as well as natives of the belt through which it passes an immunity from diseases which previously carried off by death thousands who attempted to work and live there.

There are other sanitary measures operating for the improvement of mankind, which time forbids us mentioning, from some of which perhaps even more convincing arguments might be drawn.

MONTHLY JOTTINGS.

The Annual Meeting of the Association will be held in the City Hall, Winnipeg, on the evening of Thursday, September 14, 1916, at 8 p.m., city time.

At this meeting the reports of the Executive, the Vice-Presidents for the various provinces, and the auditors will be presented and the election of officers will be held.

All members and associates are invited to attend this meeting.

Under Section 13 of the Constitution members not able to attend may entrust their vote by proxy to any other member present. These proxies should be in writing and may be given direct to another member or sent to the Secretary.

The Executive did not feel justified in arranging for anything in the nature of a convention or social gathering, but felt that an annual meeting should be held for business purposes and for the election of officers.

Next year we hope that the war will be over and that there will be a better opportunity for a longer convention.